CALIFORNIA DIVISION OF MINES AND GEOLOGY

Fault Evaluation Report FER-50

July 25, 1977

1. Name of fault: Camarillo fault.

2. Location of fault: Camarillo 7.5 minute quadrangle, Ventura County (figure 1).

3. Reason for evaluation: Part of a ten-year program.

4. References:

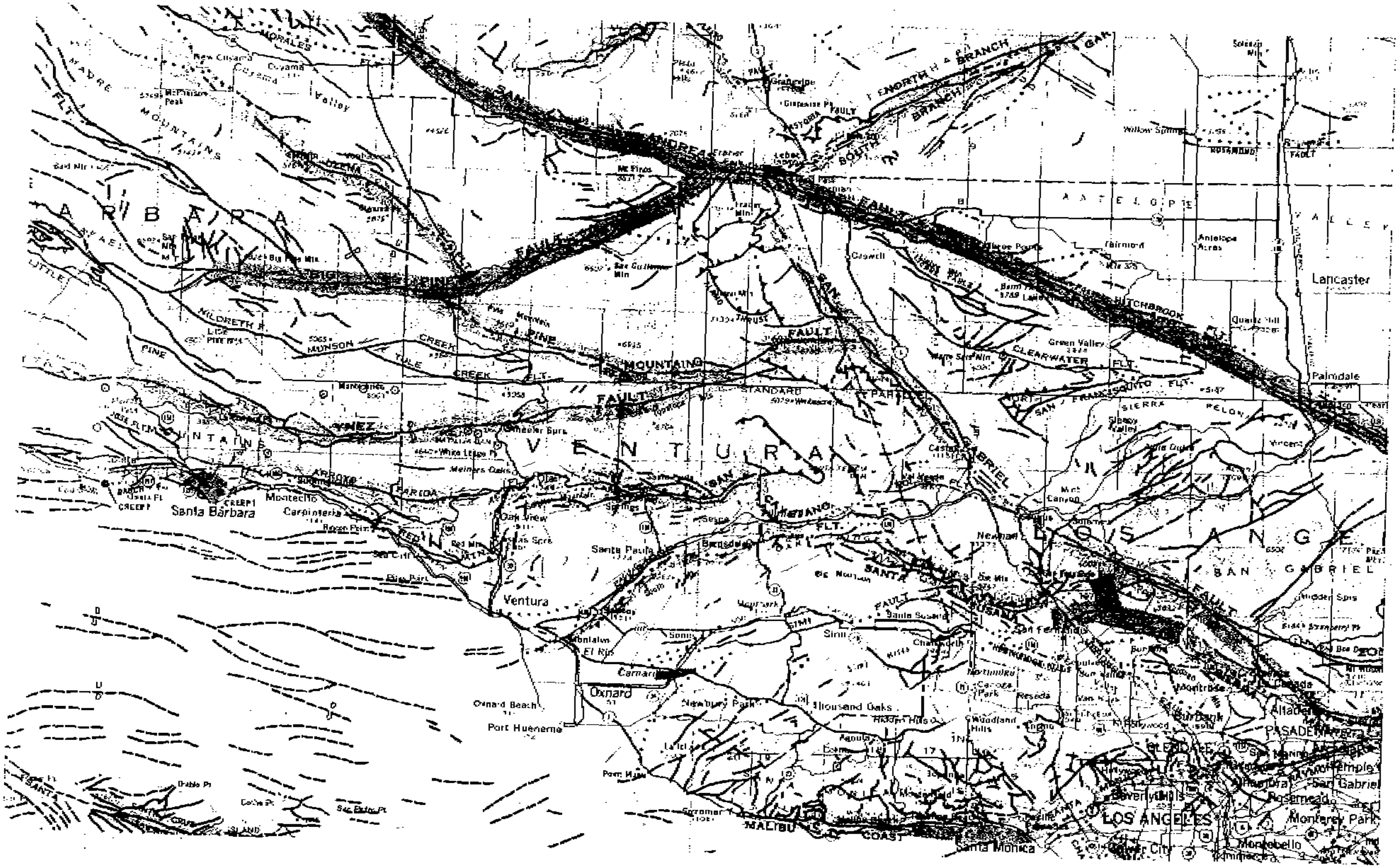
a) Jennings, C.W., 1975, Fault Map of California with locations of volcanoes, thermal springs and thermal wells: California Division of Mines and Geology, California Geologic Data Map Series, Map no. 1, scale 1:750,000.

b) Mukae, M.M., and Turner, J.M., 1975, Ventura County water resources management study, geologic formations, structures and history in the Santa Clara-Calleguas area in Compilation of technical information records for the Ventura County cooperative investigation: California Department of Water Resources, v. 1, p. 1-29, 2 plates.

c) Page, R.W., 1963, Geology and ground water appraisal of the Naval Air Missile Test Center area Point Mugu, California: U.S. Geological Survey Water Supply Paper 1619-S, 40 p., plate 1, map scale 1:31,680.

d) Pasta, Dave, 1958, Geology of the Las Posas-Camarillo Hills area, Ventura County, California: Unpublished M.A. thesis, University of California, Los Angeles, Map scale 1:24,000.

FAULT EVALUATION REPORT 50
FIGURE 1. General location of the Camarillo fault (Jennings, 1975).



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e) Turner, J.M., 1975, Ventura County water resources management study, aquifer delineation in the Oxnard-Calleguas area, Ventura County in compilation of technical information records for the Ventura County cooperative investigation: California Department of Water Resources, v. 1, p. 1-45, 10 plates.

f) Turner, J.M., and Mukae, M.M., 1975, Ventura County water resources study, effective base of fresh water reservoir in the Oxnard-Calleguas area in Compilation of technical information records for the Ventura County cooperative investigation: California Department of Water Resources, v. 1, p. 1-15, 1 plate.

g) Weber, F.H., Jr., Kiessling, E.W., Sprotte, E.C., Johnson, J.A., Sherburne, R.W., and Cleveland, G.B., 1975, Seismic hazards study of Ventura County, California: California Division of Mines and Geology, Open File Report 76-5LA, 396 p., 9 plates, map scale 1:48,000.

h) Ziony, J.I., Wentworth, C.M., Buchanan-Banks, J.M., and Wagner, H.C., 1974, Preliminary map showing recency of faulting in coastal southern California: U.S. Geological Survey, Miscellaneous Field Studies Map MF-585, 15 p., map scale 1:250,000, 3 pl.

5. Summary of available data:

Only sketchy information is available for the Camarillo fault. Turner (1975, plate 8) depicts the fault as being vertical. Weber, et al (1975, p. 175), citing an unpublished map of Bailey, states that the Camarillo fault dips 20° to the north. Most of the sources consulted agree that the northern block has been elevated relative to the southern block (Mukae and Turner, 1975, p. 19; Turner, 1975, plate 8; Turner and Mukae, 1975, p. 8; Weber, et al., 1975, p. 175).

Mukae and Turner (1975, p. 19) state that the Camarillo fault displaces the San Pedro Formation "... and probably some alluvium..." near Camarillo. They cite as evidence the discontinuities of ground water levels in the lower aquifers across the fault. They imply that the "alluvium" may, in part, be Holocene, and thus, state that the fault may have moved during the Holocene.

Other authors (Weber, et al., 1975, p. 175, 182-183; Ziony, et al., 1974) note that late Pleistocene units are offset, and that topographic evidence for late Pleistocene offset also exists along the fault. Indeed, simply using the topographic map alone, one can note a straight, rather high, topographic feature (which could be a modified fault scarp) south and west of Camarillo (see plate 1). Weber, et al. (1975) depict the fault as buried under younger alluvium, except as noted, along the entire length; however, they also noted two "possible sags" (possible locations of closed depressions?) in younger alluvium along the front of this same feature. From the amount of topographic relief (about 70 feet) one could speculate that the vertical displacement along this feature (if it is a fault) could be a minimum of 70 feet. Turner (1975, plate 8) depicts the Camarillo fault as displacing the base of the San Pedro Formation by 200 feet, and the base of the alluvium by 160 feet. Depending on the age one assigns to the lowest alluvium (Yeats, R.S., oral communication, 1977 -- citing Sarna-Wojckcki, work in progress -- states that the uppermost ~~San Pedro~~ San Pedro Formation -- might be 250,000 years old rather than the 600,000 year date previously believed), one can calculate that the average rate of vertical displacement could ~~have~~ have been at least 0.8 cm. ~~and~~ to 2.0 cm. per 100 years.

6. Interpretation of air photos: Not attempted at this time.

7. Field observations: Not attempted at this time.

8. Conclusions:

The Camarillo fault appears to displace late Pleistocene units and may displace Holocene units, both at depth and ~~near~~ at or near the surface, although this has not been conclusively demonstrated. Although some confusion exists about the dip of the fault, topographic evidence suggests that the faulting may be confined to a rather narrow zone. However, it has not been conclusively demonstrated that the topographic features noted in this report are, indeed, a product of faulting. More definitive data is needed with respect to the age and definition of the fault.

9, Recommendations:

The information summarized in this report is not sufficient to determine conclusively whether or not the fault should or should not be zoned under the present criteria. The Camarillo fault may indeed be a near surface, Holocene fault, but further work is necessary whether this is or is not the case. I have doubts about just how effective additional work may be. Certainly aerial photo interpretation and a limited field check would be appropriate. However, since the fault is in alluvial deposits, it may prove difficult to determine whether the fault does or does not exist at or near the surface. Trenching or geophysical surveying, or both, may be necessary, and yet may still leave this basic problem without a clear conclusion. Suffice to say, the existing data is not enough evidence to cause the fault to be zoned at this time.

10. Investigating geologist's name; date:

Theodore C. Smith

THEODORE C. SMITH
Assistant Geologist
July 25, 1977

I agree with recommendation not to zone based on existing data - further work is apt to be fruitless without trenching, therefore this is given a relatively low priority. E.W.H. 7/26/77